

bottom, and in giving an opinion to act as a just judge; moreover, he has brought to bear upon every part of it his own logical habit of mind. It will be welcomed as a valuable addition to Baconian literature, and to the history alike of philosophy, literature, logic, and science.

G. F. RODWELL

THE AMERICAN CYCLOPÆDIA

The American Cyclopædia: a Popular Dictionary of General Knowledge. Edited by George Ripley and Charles A. Dana. 17 vols. (New York and London: Appleton and Co., 1873-1878.)

IT was not to be expected that so eminently practical a nation as the United States would be long behind the stereotyped peoples of Europe in so indispensable an article as an encyclopædia. It is indeed many years since such a work was published in the States, and that so recently completed by the enterprising firm of Appleton is really a new edition of what some of our readers may remember as "The New American Cyclopædia." On the very surface the present issue is a vast improvement on the old, with its black funeral covers and unpleasant type. Indeed, the present edition may be regarded as really a new work, brought up to date in all departments. Ten years had elapsed between the completion of the old edition and the commencement of the new, and between 1863 and 1873, advances of vast importance had been made in nearly all departments of science. That Messrs. Appleton made competent provision to take account of these advances is evident from the list of men whose services they were able to obtain in bringing out the new edition. Besides the editors-in-chief, Messrs. Ripley and Dana, and four "associate editors," there was a large staff or "revisers," and a "corps" of contributors containing most of the well-known scientific workers of the States. The organisation of the work of the new edition appears to have been excellent, and from a description of the extensive premises devoted to the staff, it seems to have been a British Museum in miniature, with greatly improved arrangements.

The "American Cyclopædia" can scarcely be compared with any existing Cyclopædia in this country. It is not on so extensive a scale as the "Britannica," but is considerably larger than "Chambers'." It is indeed a kind of compromise between these two well-known works of reference; the information is not so conglomerated into huge articles as in the former, nor is it quite so subdivided as the latter—a feature which renders the latter so satisfactory from a purely "reference" standpoint. The "American" has, however, on the whole, stronger affinities with "Chambers'" than with any other; for while there are longish articles on some of the leading departments, still as a rule the great subjects are broken up into their subdivisions. Thus the article "NATURAL PHILOSOPHY" is little more than a reference to the various departments included under the wide term; under "CHEMISTRY" some of the main principles and data of the science are given, with copious references to subordinate heads. Some of these latter, in the two great divisions of physical science, are treated at considerable length, as AFFINITY, ATOMIC THEORY, HEAT, LIGHT, MAGNETISM, and so on, the last-mentioned

having been written by the late Joseph Henry. GEOLOGY is a moderate-sized article by Sterry Hunt, and BOTANY is rather short, with, however, a good bibliography appended; the author's name is not given. Prof. Cleveland Abbe contributes a model article on METEOROLOGY, and many kindred subjects are written by the same able hand. One feature which the "American" has in common with "Chambers'" is the giving biographies of living men, a feature the advisability of which we do not care to discuss. Happily the "American" confines itself mainly to a statement of facts in the life and work of living men; eminence in any direction is sufficient to gain admission to these pages, and all sorts of names will be found therein, from "Boss" Tweed to Charles Darwin.

The geography in this new edition is specially well done, one of the largest and best articles in the work being that on the United States. Japan is well done by Prof. Griffis of Tokio, the language being by Dr. Hepburn, of Tokio, and the literature by Mr. Satow, our Secretary of Legation there. We are glad to find that in most cases where it is desirable, satisfactory bibliographies are appended to the articles. Perhaps one of the most distinctive features of the Cyclopædia is the copious index, occupying the whole of the seventeenth volume, which has been prepared for the whole work. This, indeed, doubles the value of the Cyclopædia as a book of reference. Although, as we have said, the great subjects are, as a rule, subdivided into their leading branches, still, throughout the greater number of articles are incidental references containing scraps of valuable information which can find no place of their own. In this way much useful knowledge would be buried but for a good index, and the index prepared for the "American" by Dr. Conant, is one of the most thorough and best planned we have seen. It covers 800 pages, is simple in its method, easily consulted, and admirably adapted not only to bring out all that is in the work, but to enable any one who might desire it, to follow out any subject to completeness. The bold clear type in which the index is printed adds greatly to its usefulness, and, altogether, it is a feature which those who are in the habit of consulting cyclopædias in earnest will know how to value.

The maps and illustrations in the "American" are, on the whole, faithful and good, and ample in quantity, and the type and paper are excellent. In short, in all the features distinctive of a cyclopædia the "American" will hold its own with any in the Old World. It would no doubt be possible to pick faults in plan and criticise some of the particular articles, but this we are not disposed to do where the work as a whole is so eminently satisfactory. The only objection we feel inclined to make is to the price. The volumes are almost the same size as those of "Chambers'," but each is more than double in price, and not very much less than the price of a volume of the "Britannica." This may have been rendered necessary by the great expenses of preparation, but we doubt if at such a price it would command any great sale here. We are surprised to find that the work is sold, not through the regular "trade," but by what is known here as the "canvassing" system. We should have thought that so high-class a work would not have had to depend on any such system for sale. Of course the articles are mainly

written from the American point of view; but to an English reader this adds little that seems peculiar, and were it not for the price of the work, it might very well be put into the English market. Altogether it is highly creditable to publishers and editors, as well as to American enterprise.

OUR BOOK SHELF

The Fairy-Land of Science. By Arabella B. Buckley. (London: Stanford, 1878.)

THE modest preface which Miss Buckley has prefixed to her attractive-looking volume almost disarms criticism, her desire being, she states, simply to awaken a love of nature and of science, while giving pleasure to young people. In this aim Miss Buckley will, we have no doubt, fully succeed.

The substance of this volume was given as a series of lectures to children last spring, at St. John's Wood, and it is at the request of friends who were then present, that the lectures have been printed. We could wish that there were some one in every town equally gifted in rendering science attractive to young people and thus inciting them to a farther and deeper study of natural knowledge.

It would be easy to find fault with some things in this book if we simply regarded it from the narrow standpoint of the scientific critic, without taking into consideration the aim of the author; but as a reading-book to inspire children with a love for nature, which is all the author claims for it, we do not know of a more interesting nor useful gateway to science. The really admirable illustrations with which the book abounds and the pleasant, light manner in which the author carries her readers along from one subject to another will make the "Fairy-Land of Science" a welcome and useful addition to juvenile literature.

In the opening lecture Miss Buckley introduces us to her fairies, showing how things far more wonderful than those related in fairy-tales are daily happening around us, and also how this fairy-land of science may be entered by any one with eyes and with a wish to use these eyes.

In concluding the series of lectures, after showing how it is but the outskirts of this fairy domain which has been touched, the results of a study of science are thus summed up:—

"Pleasant and happy thoughts may thus be conjured up at any time, wherever we find ourselves, by simply calling upon nature's fairies and asking them to speak to us. Is it not strange, then, that people should pass them by so often without a thought, and be content to grow up ignorant of all the wonderful powers ever active in the world around them?"

"Neither is it pleasure alone which we gain by a study of nature. We cannot examine even a tiny sunbeam, and picture the minute waves of which it is composed, travelling incessantly from the sun, without being filled with wonder and awe at the marvellous activity and power displayed in the infinitely small as well as in the infinitely great things of the universe. We cannot become familiar with the facts of gravitation, cohesion, or crystallisation without realising that the laws of nature are fixed, orderly, and constant, and will repay us with failure or success according as we act ignorantly or wisely; and thus we shall begin to be afraid of leading careless, useless, and idle lives. We cannot watch the working of the fairy 'life' in the primrose or the bee, without learning that living beings as well as inanimate things are governed by these same laws of nature; nor can we contemplate the mutual adaptation of bees and flowers without acknowledging that it teaches the truth that those succeed best in life who, whether consciously or unconsciously, do their best for others."

This extract will be sufficient to show the happy way in which Miss Buckley addresses her young hearers and readers. At the same time the author would, in our opinion, have done better had she not attempted to travel over so wide a range of subjects as is embraced in her lectures, for we skip from chemistry to physics, then to meteorology, physical geography, and geology, thence to the life of a primrose, afterwards to coal, then to bees, and finally to the fertilisation of plants. This discursiveness leads to occasional looseness of statement, as, for example, employing the terms positive and negative to express the poles of a magnet; it also causes a slurring over difficulties, as in the attempt to explain the measurement of the wave-lengths of light which, with the subject of diffraction, had better have been omitted in a child's book like the one before us.

More durable and equally interesting information might have been given by selecting some one branch of science, examining carefully a few simple phenomena, and regarding them under various aspects; Faraday's juvenile lectures at the Royal Institution—his lectures on a candle, for instance—are the best illustrations of what we mean.

In the study of nature there are very many statements which a child must take simply on the assertion of his or her teacher, with the explanation that their verification is only possible when the child has grown older and wiser; regions are thus opened up beyond its present powers, and the first lesson in education has been learnt—the consciousness of ignorance. We have no doubt, however, that this lesson Miss Buckley would wish to convey as much as we ourselves.

New Commercial Plants, with Directions for their Growth and Utilisation. By Thos. Christy, F.L.S. (London: Christy and Co., 1878.)

THIS is the second of what is evidently intended to form a series of pamphlets on plants either of entirely new economic interest or those whose uses have been extended or developed or are capable of being developed. It is a matter of notoriety that numerous products of the vegetable kingdom require only to be more generally or better known to become more largely used. New products which reach our markets often fall entirely through, simply for the want of a proper appreciation of their value or of some one to take them up and properly test them. This task Mr. Christy seems to have set himself to do, for in his preface he asks for information upon new drugs or plants, such as notes bearing upon their properties and uses, and what is a very valuable point indeed, he appeals to residents in tropical countries for flowers, leaves, and fruits of any useful plant, all of which can be sent any distance in perfect condition in jars or bottles filled with salt and water. This advice is well worthy of consideration by those in distant lands who have opportunities for sending home such specimens, for it often happens that much time, trouble, and expense are thrown away by sending home specimens in such a manner that they rot on the voyage.

As an illustration of what is a "new commercial" product so far as this country is concerned, but which has been known and used in India for a long time, we may mention the Chaulmugra (*Gynocardia odorata*), a full description of which, accompanied by a figure, is given by Mr. Christy. It is not a little remarkable the rapidity with which the oil from the seed of this tree has become adopted by the medical profession in this country for consumptive and cutaneous diseases. Amongst the other plants treated of in the pamphlet under review are *Urostigma vogelii*, Miq., a new source of india-rubber from West Africa, the Mahwa tree (*Bassia latifolia*, Roxb.), a native of the East Indies, the flowers of which are produced very abundantly and yield a large quantity of spirit.